



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,190	06/20/2000	William P. Bunton	1662-29000 (P00-3000)	5908
22879	7590	05/17/2005	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			DUONG, FRANK	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/597,190

Applicant(s)

BUNTON ET AL.

Examiner

Frank Duong

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11 and 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is a response to communications dated 12/07/04. Claims 1-18 are pending in the application.

Claim Objections

2. Claim 1 is objected to because of the following informalities: Line 6, "an incorrect a channel" should read --an incorrect channel--. Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,865,231.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention of claim 1 of instant application encompasses the claimed subject matter of claim 1 of the '231 patent. Moreover, claim 1 of the

instant application is broadened by omitting certain limitations such as "*receiver configured to convert the differential signal into a sequence of code*" and "*a decoder ... inversion of the differential signal*". However, it has been held that the omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. *In re Karlson*, 136 USPQ 184(CCPA). Also note *Ex parte Rainu*, 168 USPQ (Bd. App. 1969); omission of a reference element whose function is not needed would be an obvious variation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-8, 10-11 and 14-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Drottar.

Regarding **claim 1**, in accordance with Drottar reference entirety, Drottar discloses a high speed interconnection link (Fig. 4) that comprises:

a receiver (113) configured to receive a plurality of channels (108-111) (col. 3, lines 46-54);

a receiver logic circuit (118-121) configured to receive signals from each of the plurality of channels (108-111) and monitor the signals for symbols (A1-A4) that are unique to each channel, wherein upon detecting a symbol on an incorrect channel (*col. 4, line 28; unexpected cell*) in the channels (links), the receiver logic circuit is configured to correct the order of the channels (*col. 3, lines 55-60 and col. 4, lines 20-55 and col. 5, lines 3- 43 reading in reference to Fig. 9*).

Regarding **claim 2**, in addition to features recited in base claim 1 (see rationales discussed above), Drottter further discloses a transmitter (100) coupled to the plurality of channels (108-111) and a transmitter logic circuit (101-103) configured to transmit signals to corresponding channels, wherein the transmitter logic circuit is configured to reorder the correspondence of the signals transmitted to the channels (*col. 3, lines 46-54 and col. 5, lines 23-43*).

Regarding **claim 3**, in addition to features recited in base claim 2 (see rationales discussed above), Drottter further discloses wherein the transmitter logic circuit (101-103) comprises a bank of multiplexers (103 and 104-107) each configured to transmit a selected one of two input signals to be transmitted through a channel (any of 108-111) (note: disclosed round robin controller is equated to corresponding to "*a bank of multiplexers*" because of its selection of signal for transmitting in combination with interfaces 104-107 and logic 101-102).

Regarding **claim 4**, in addition to features recited in base claim 1 (see rationales discussed above), Drottter further discloses wherein the receiver logic circuit (118-121) comprises a bank of multiplexers (118) each configured to transmit a selected one of

two input signals (signal received at 114-117) received from a channel (any of 108-111) (note: disclosed incoming message buffers is equated to corresponding to "a bank of multiplexers" because of its selection of signal for transmitting in combination with interfaces 114-117 and logic 119-121).

Regarding **claim 5**, in addition to features recited in base claim 1 (see rationales discussed above), Drottar further discloses wherein the receiver logic circuit (118-121) comprises a bank of multiplexers (118) each configured to transmit a selected one of all the signals (signal received at 114-117) received in the channels (any of 108-111) (note: disclosed incoming message buffers is equated to corresponding to "a bank of multiplexers" because of its selection of signal for receiving in combination with interfaces 114-117 and logic 119-121).

Regarding **claim 6**, in addition to features recited in base claim 1 (see rationales discussed above), Drottar further discloses wherein the received symbols are insensitive to signal inversion (col. 4, line 62 to col. 5, line 2, Drottar discloses when the expected cell on port 114 does not arrive, the receiver advances port 115 to the top of the round-robin order overriding and resetting sequence number and round-robin expectation. The recitation thereat reads on the claimed limitation).

Regarding **claim 7**, in addition to features recited in base claim 1 (see rationales discussed above), Drottar further discloses wherein the symbols are 10-bit lane identifiers compatible with an 8B/10B encoding scheme (note: at col. 3, lines 38-44, Drottar discloses the patented invention is applicable in the Infiniband environment (HCA and TCA). Thus, it is inherent the discussed symbols are corresponding to the

claimed limitation for the claimed limitations are encompassed by the Infiniband standard).

Regarding **claim 8**, in addition to features recited in base claim 1 (see rationales discussed above), Drottar further discloses wherein the channel order correction (cell synchronization) is performed while a first set and a second set of training data (skipped cells) are transmitted through the link (col. 5, lines 3-20 reading in reference to Fig. 9).

Regarding **claim 10**, in accordance with Drottar reference entirety, Drottar discloses a method for correcting the order of data signals received via a plurality channels (108-111), wherein the method comprises: transmitting (100) symbols (cells) across the plurality of channels (108-111), wherein the symbols are unique to each channel (col. 3, lines 50-54); and ordering (119) at least two channels on which unique symbols arrive so that the unique symbols arrive at respective predetermined buffers (118) (col. 3, lines 55-60).

Regarding **claim 11**, in addition to features recited in base claim 10 (see rationales discussed above), Drottar further discloses wherein the plurality of channels are part of a communications link (112) comprising a transmitter port (any of 104-07 and 101-103) and a receiver port (any of 114-117 and 118-121) wherein: the receiver port comprises a lane reorder circuit (119) that is configured to reroute the channel signals if the receiver port detects an unexpected channel symbol in the signals transmitted by the transmitter port (col. 4, lines 29-55); and a transmit port comprising a lane reorder circuit (103) that is configured to reroute the channel signals if the transmit port does not detect a predetermined response from the receiver port (col. 3, line 46 to col. 4, line 11).

Regarding **claim 14**, in accordance with Drottar reference entirety, Drottar discloses a computer network (Fig. 4) that comprises: a first device (100) having a first adapter (101-102 and 104-105), a second device (113) having a second adapter (114-117 and 118-121) coupled to (108-111) the first adapter by a communications link (112) having one or more serial lanes (108-111), the second adapter having a multilane transmit path and a multilane receive path, wherein the multilane receive path includes a lane reorder circuit (118-121) configured to reorder the arrival lanes of the multilane receive path if misordering is detected (col. 3, line 55 to col. 5, line 20).

Regarding **claim 15**, in addition to features recited in base claim 14 (see rationales discussed above), Drottar further discloses wherein the multilane receive path further includes: a plurality of receive buffers (118) coupled via the reorder circuit (118-121) to the communications link serial lanes (108-111); and a reconstruction circuit (119-121) configured to retrieve symbols from the plurality of receive buffers (118) to form an output sequence of received symbols (cells), wherein the reconstruction circuit is configured to examine lane identifier symbols (BSNS) in training packets (skipped cells) received via the communications link to detect misordering of the lanes (col. 5, lines 3-19).

Regarding **claim 16**, in addition to features recited in base claim 15 (see rationales discussed above), Drottar wherein when misordering is detected the reorder circuit is configured to adjust the coupling between the serial lanes and the receive buffers to compensate for the misordering (col. 5, lines 3-35).

Regarding **claim 17**, in addition to features recited in base claim 14 (see rationales disclosed above), Drottar wherein the reorder circuit is configured to couple the communication link serial lanes to the lanes of the multilane receive path (see Fig. 4 for network connection).

Regarding **claim 18**, in addition to features recited in base claim 14 (see rationales discussed above), Drottar wherein the first adapter (100) includes a multilane transmit path (103 and 104-107) and a multilane receive path (104-107 and 103), wherein the multilane receive path includes a lane reorder circuit configured to reorder the lanes of the multilane receive path if the second adapter is not receiving or is incorrectly receiving signals transmitted from the first adapter to the second adapter (co/. 5, lines 3-19).

Allowable Subject Matter

5. Claims 9 and 12-13 are allowed.

Response to Arguments

6. Applicant's arguments filed 12/07/04 have been fully considered but they are not persuasive. Applicants' arguments will be addressed hereinbelow in the order in which they appear in the response filed 12/07/04.

In the Remarks of the outstanding response, on page 12, pertaining the rejection of claim 1, Applicants give a detailed analysis of Drottar reference and argue "*In Drottar, the cells received are not "unique to each channel"; rather, in Drottar the cells are*

assigned to each link in a round-robin fashion. (Drottar Co. 4, lines 33-40). For this reason alone, Drottar does not teach or fairly suggest the limitations of claim 1".

In response Examiner respectfully disagrees and asserts the Drottar reference, as clearly pointed out in the Office Action, does indeed anticipate the claimed limitations in a manner as recited. In contrast to the Applicants' argument, In Drottar cells are "unique to each channel" because of a bundle sequence number (BSN) assigned to them for the purpose of detecting "skipped cells" (Drottar, col. 5, lines 5-8).

In the Remarks, on page 13, Applicants argue "*Drottar does not teach or fairly suggest that "wherein upon detecting a symbol on an incorrect a channel, the receiver logic circuit is configured to correct the order of the channels". The advantages of such a system is that if channels are crossed during layout or physical installation, this may be taken care of by way of the receiver. (Specification, Page 13, lines 20-22)".*

In response Examiner again respectfully disagrees. As clearly pointed out in the Office Action, the recited limitation is anticipated by Drottar reference as disclosed at col. 5, lines 3-20 and thereafter. At col. 5, lines 3-20, Drottar discloses when more than a simple skip is detected using the bundle sequence number, current cells in the other port's buffers should be emptied out in a best fashion. In doing so, the receiver is configured to correct the order of the channels upon detecting mismatched or unexpected arrival cell. As for the argument "advantages of such a system ... of the receiver", Examiner's response to that would be this feature is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from

the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Pertaining the rejection of claim 6, Applicants argue (Remarks, page 13) "*claim 6 specifically recites "received symbols," and thus the cells which fails to arrive in Drottar, and any action taken thereon, do not teach or fairly suggest "received symbols are insensitive to signal inversion."*"

In response Examiner respectfully disagrees and asserts the Drottar reference does indeed anticipated the claimed limitation in a manner as recited. As clearly pointed out in the Office Action, Drottar's "received cells" are very insensitive to signal inversion. Therefore, they must be received in a manner in sync with the transmitted symbols or in a specific order.

As for the argument pertaining the rejection of claim 10 (Remarks, page 14), please refer to the response pertaining the rejection of claim 1 discussed above.

Pertaining the rejection of claim 14, Applicants argue "*Drottar is concerned only with reordering arrival times, not "reorder[ing] arrival lanes of the multilane receive path if misordering is detected."*"

In response Examiner respectfully disagrees. Drottar's invention, as disclosed in the background, is applicable in the Next Generation I/O (NGIO) network, the infancy stage of the Infiniband. At col. 3, lines 37-60 and thereafter, Drottar discloses a system comprising transmitter 100, a device as a host channel adapter (HCA) and a receiver, a device as a target channel adapter (TCA). This system is an Infiniband system. Therefore, the physical links (108-111) between the transmitter and the

receiver are the lanes in the Infiniband system. Reordering the arrival times of the physical links (108-111) if a misordering is detected is the reordering arrival lanes of the multilane receive path. Thus, contradistinction to the Applicants' argument, Drottar, as clearly pointed out in the Office Action, does indeed anticipate the claimed limitation in a manner as recited.

Pertaining the rejection of claim 15, Applicants argue "*Drottar's 'skipped cells' (that is, cells not received (Drottar Col. 4, line 40)) cannot be the 'training packets' examined by the reconstruction logic*".

On the contrary, Examiner asserts the Drottar reference does indeed anticipate the disputed limitation in a manner as recited. A careful review of claim 15 and the original specification Examiner find no specific definition for the disputed term to exclude it from be read on by Drottar's "skipped cells". In examining the instant application Examiner has strictly followed the MPEP guidelines to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023,1027-28 (Fed. Cir. 1997).

Examiner believes an earnest attempt has been made in addressing all of the Applicants' arguments. Due to the amendment fails to place the application in a favorable condition for allowance and the arguments are not persuasive, the rejection is maintained.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Finney et al (USP 5,570,356).

Cassiday et al (USP 5,978,419).

Ducaroir et al (USP 6,167,077).

Potluri et al (USP 6,792,003).

Martin, Hari Coding Objectives for 10G FC, www.t10.org/ftp/t11/document.99/99-745v0.pdf, pages 1-22, December 8, 1999.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Duong whose telephone number is 571-272-3164. The examiner can normally be reached on 7:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Frank Duong", with a stylized flourish at the end.

Frank Duong
Primary Examiner
Art Unit 2666

May 15, 2005